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PATENT SPECIFICATION (21) 71,352 /7

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Related Art (56)	255261	(67694/60)	81.4, 73.2
	229924	(50291/59)	81.3, 81.4

The following statement is a full description of this invention, including the best method of performing known to me :

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X890-97-4D-31 P. C.

F. D. Atkinson, Government Printer, Canbe

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This invention relates to cladding material. In a particular aspect it relates to cladding material which can be used on roofs as roofing or on walls of buildings; the former being the preferred use.

This invention provides cladding material comprising a sheet of material having a plurality of corrugations in the form of generally parallel troughs and crests, one edge of the material generally transverse to the troughs and crests having a first flange which is descendant with respect to the troughs and crests thereat and the other edge of the material generally transverse to the troughs and crests having a second flange which is ascendant with respect to the troughs and crests thereat; the first and second flange each having a return portion; and wherein the troughs extend respectively more and less at said one edge and said other edge than the

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crests and wherein those parts of the return portion of the first flange which are adjacent to the crests are longer than those parts of the return portion of the first flange which are adjacent to the troughs and those parts of the return portion of the second flange which are adjacent to the troughs are longer than those parts of the return portion of the second flange which are adjacent to the crests.

By having the return portion of the second flange relatively longer in the region of the troughs there results good weatherproofing as roof cladding when the ascendant flange is relatively more adjacent a roof ridge than the first flange and a saving of metal. Further, the material may be used either side up as it has rotational symmetry and this feature may be taken advantage of by coating the two sides with different materials - the user choosing whichever he wants. Further, a number of such sheets will interlock.

The sheets can simulate tiles.

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The above described cladding material may be made by pressing but it is preferred that it be roll-formed and this invention also provides a method of roll-forming.

In roll-forming one may start with a plane sheet and firstly form the ascendant and descendant flanges or start with a sheet already having those flanges. Thereafter the sheet is rolled to form the corrugations. At the edge with the descendant flange the flange in the region of the troughs is bulged outwardly, so giving the troughs the extra length, and a similar operation is performed in the region of the crests at the ascendant flange. Further rolling using rollers perpendicular to the plane of the sheet forms the return portions with a length relation as stated.

This invention also provides apparatus for forming such cladding material, the apparatus comprising rollers adapted to roll a sheet having a plane and having a descendant flange at one edge and an ascendant flange at the other edge whereby to form corrugations in the form of generally parallel troughs and crests generally transverse to said one and said opposite edge and to bulge the descendant and the ascendant flanges outwardly in the region of, respectively, the troughs and crests whereby to increase the length of the troughs and crests at, respectively, said one, and said other edge, and rollers adapted to rotate about axes perpendicular to said plane and to form return portions on the descendant

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and ascendant flanges such that those parts of the return portion of the first flange which are adjacent to the crests are longer than those parts of the return portion of the first flange which are adjacent to the troughs and those parts of the return portion of the second flange which are adjacent to the troughs are longer than those parts of the return portion of the second flange which are adjacent to the crests.

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The configuration of the cladding per se is advantageous and a saving of metal in its production results from the configuration. Further, that configuration lends itself to roll-forming as buckling of the ascendant and descendant flanges is avoided as they are not kept substantially in a plane but have a profile, in plan, of troughs and crests corresponding to, in respect of the descendant flange, the crests and troughs intermediate the flanges and, in respect of the ascendant flange, the troughs and crests intermediate the flanges.

The present invention will be illustrated by way of non-limiting example thereof with the aid of the accompanying drawings in which :-

Figure 1 is a perspective view of cladding material in accordance with this invention,

Figure 2 is a plan view of the cladding material shown in Figure 1,

Figure 3 is a cross-sectional view on line A-A in Figure 1,

Figure 4 is a perspective view of part of apparatus for forming the cladding material shown in Figures 1-3,

Figure 5 is an elevation view of part of the apparatus shown in Figure 4,

Figure 6 is an elevation view of part of the apparatus shown in Figure 4,

Figure 7 is an elevation view of part of the apparatus shown in Figure 4,

Figure 8 is a perspective view of another part of apparatus for forming the cladding material shown in Figures 1-3.

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Figure 9 is a cross-sectional view of part of the apparatus shown in Figure 8,

Figure 10 is a cross-sectional view of part of the apparatus shown in Figure 8,

Figure 11 is a cross-sectional view showing the cladding in use, and

Figure 12 is another cross-sectional view showing the cladding in use.

The cladding material 1 shown in Figures 1-3 is of indeterminate length and has corrugations extending transverse to its length. The corrugations comprise crests 3 and troughs 4.

The cladding material also has a first flange 6 at side 7 and a second flange 8 and side 9. Those flanges 6 and 8 have return portions, respectively 6a and 8a.

It is to be noted that the troughs 4 extend more at side 7 than do the crests 3 and that the troughs 4 extend less at side 9 than do the crests 3.

Further, it is to be noticed that the return portion 6a is longer at 6a' in the regions of the crests 3 than it is at 6a" in the regions of the troughs 4. The return portion 8a is longer at 8a' in the region of the troughs 4 than it is at 8a" in the regions of the crests 3.

By having the relatively long portions 8a' (or, if the material is inverted, the portions 6a') good weatherproofing results. This is shown in Figures 11 and 12 where Figure 11 is a cross-section through the troughs 4 and Figure 12 is a cross-section through the crests 3. As shown in Figures 11 and 12, the troughs 4, which are more vulnerable to water

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penetration, are protected by the relatively long portions 8a' without the portions 8a" being as long with consequent wastage of material and by avoiding that wastage the side 7 can have a profile more simulous of a term-cotta or cement tile than if side 7 was substantially planar.

The apparatus is shown in Figures 4 and 8 with details being shown in Figures 5-7 and 9 and 10.

The apparatus comprises a supply roll 21 of metal sheet 22 which is fed in the direction of arrow 23.

From the supply roll 21, the sheet 22 is fed to a first roller stand 24 where a succession of sub-stands 27, 28 29 form a descendant flange 36 and an ascendant flange 38.

Thereafter the sheet 22 is fed to a second roller stand 39 where corrugations comprised of crests 3 and troughs 4 are formed and the descendant flange and the ascendant flange are bulged outwardly in the region of, respectively, the troughs 4 and crests 3.

Thereafter the sheet is passed to a third roller stand 41 which comprises two sets each of two rollers 42 and 43 which rotate about axes perpendicular to the plane of the sheet.

The roller stand 41 causes the ascendant and descendant flanges to be turned, respectively, over and under to form return portions 8a and 6a as shown in Figures 1-3 and which will have the length relation as described with respect to Figures 1-3.

Modifications and adaptations may be made to the above described without departing from the spirit and scope of this invention which includes every novel feature and combination

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of features disclosed herein. For instance, in lieu of stand 39 there could be used rollers which rotate about axes parallel with the length of the sheet and which rollers are moveable transverse of the length of the sheet to form corrugations.

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The claims defining the invention are as follows :-

1. Cladding material comprising a sheet of material having a plurality of corrugations in the form of generally parallel troughs and crests, one edge of the material generally transverse to the troughs and crests having a first flange which is descendant with respect to the troughs and crests thereat and the other edge of the material generally transverse to the troughs and crests having a second flange which is ascendant with respect to the troughs and crests thereat; the first and second flange each having a return portion; and wherein the troughs extend respectively more and less at said one edge and said other edge than the crests and wherein those parts of the return portion of the first flange which are adjacent to the crests are longer than those parts of the return portion of the first flange which are adjacent to the troughs and those parts of the return portion of the second flange which are adjacent to the troughs are longer than those parts of the return portion of the second flange which are adjacent to the crests.
2. Cladding material as claimed in Claim 1, having a different coating material on each of the two surfaces thereof.
3. Cladding material as claimed in Claim 1 or Claim 2 and made at least predominantly of metal.
4. Cladding material substantially as hereinbefore described with reference to Figures 1 - 3 of the accompanying drawings.

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5. A method of forming cladding material, which cladding material being in accordance with Claim 1, comprising taking a sheet having a plane and having a descendant flange at one edge and an ascendant flange at the opposite edge, rolling the sheet to form corrugations in the form of generally parallel troughs and crests generally transverse to said one and said opposite edge and to bulge the descendant and the ascendant flanges outwardly in the region of, respectively, the troughs and crests at, respectively, said one, and said other edge, and rolling the sheet with rollers rotating about axes perpendicular to said plane to form return portions on the descendant and ascendant flanges such that those parts of the return portion of the first flange which are adjacent to the crests are longer than those parts of the return portion of the first flange which are adjacent to the troughs and those parts of the return portion of the second flange which are adjacent to the troughs are longer than those parts of the return portion of the second flange which are adjacent to the crests.

6. A method as claimed in Claim 5, and including the prior step of rolling a plane sheet whereby to form said sheet having a plane and having a descendant flange at one edge and an ascendant flange at the other edge.

7. A method of forming cladding material substantially as hereinbefore described with reference to Figures 4 - 10 of the accompanying drawings.

8. Apparatus for forming cladding material, which cladding material being in accordance with Claim 1, comprising


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rollers adapted to roll a sheet having a plane and having a descendant flange at one edge and an ascendant flange at the other edge whereby to form corrugations in the form of generally parallel trough and crests generally transverse to said one and said opposite edge and to bulge the descendant and the ascendant flanges outwardly in the region of, respectively, the troughs and crests whereby to increase the length of the troughs and crests at, respectively, said one, and said other, edge, and rollers adapted to rotate about axes perpendicular to said plane and to form return portions on the descendant and ascendant flanges such that those parts of the return portion of the first flange which are adjacent to the crests are longer than those parts of the return portion of the first flange which are adjacent to the troughs and those parts of the return portion of the second flange which are adjacent to the troughs are longer than those parts of the return portion of the second flange which are adjacent to the crests.

9. Apparatus as claimed in Claim 8, and including rollers for performing the prior operation of rolling a plane sheet whereby to form said sheet having a plane and having a descendant flange at one edge and an ascendant flange at the other edge.

10. Apparatus for forming cladding material substantially as hereinbefore described with reference to Figures 4 - 10 of the accompanying drawings.

Dated this 7th day of October, 1976.

JAMES MALCOLM MACDONALD 

by his Patent Attorneys,

SANDERCOCK & SMITH.

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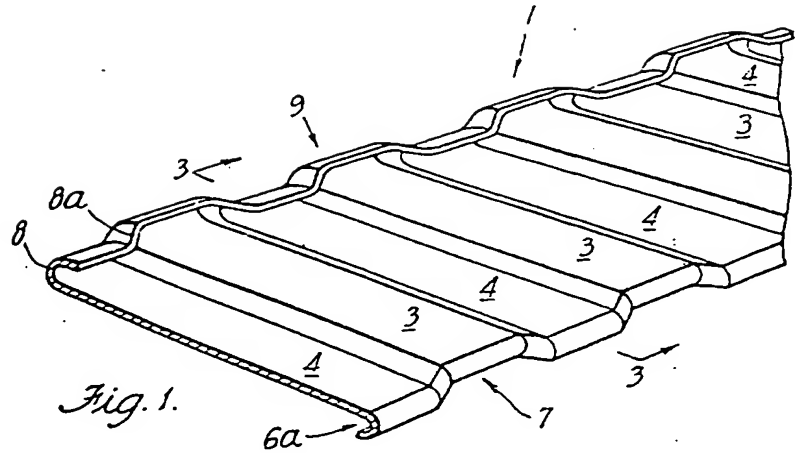


Fig. 1.

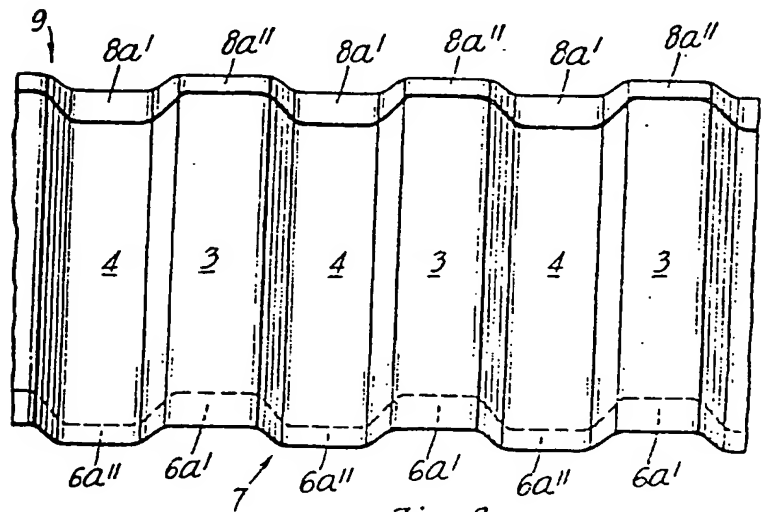


Fig. 2.

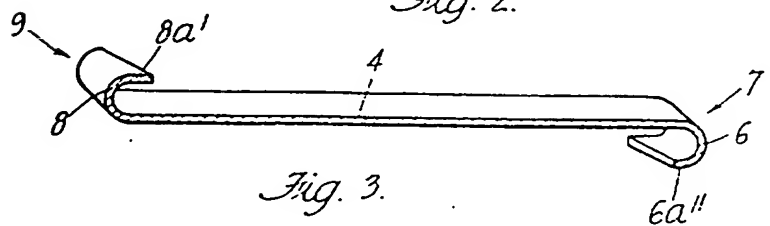


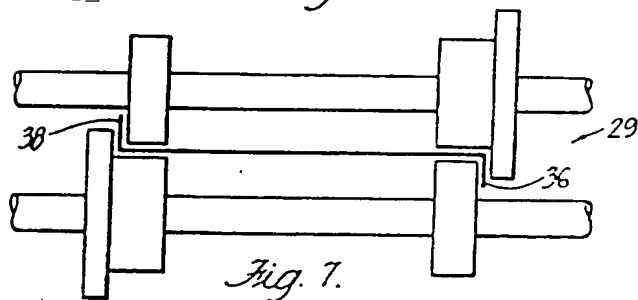
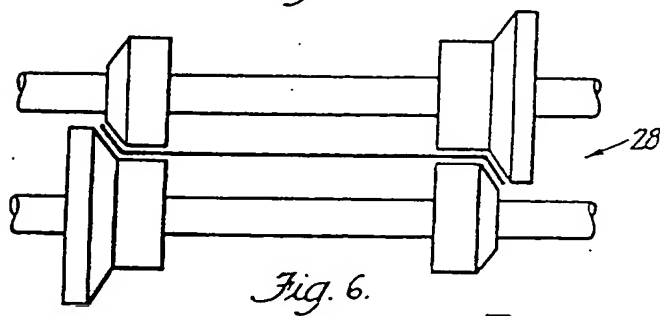
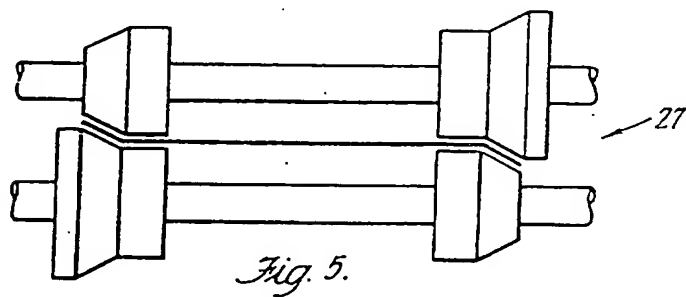
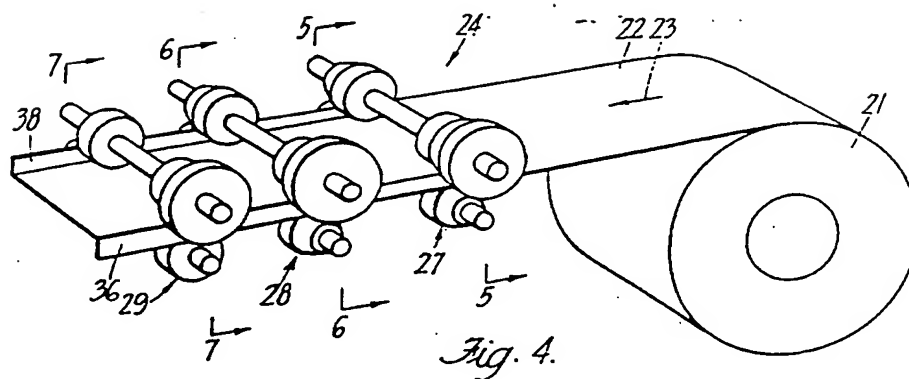
Fig. 3.

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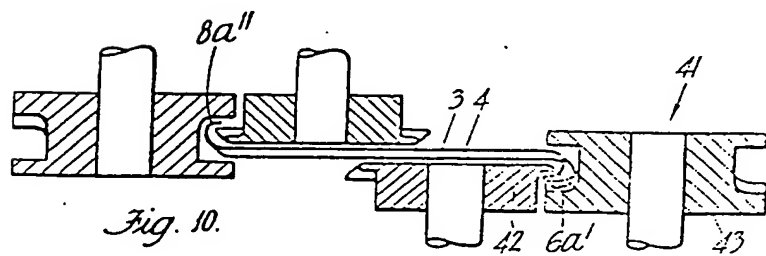
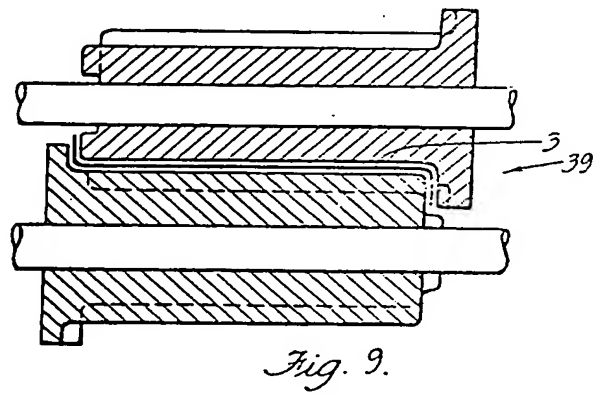
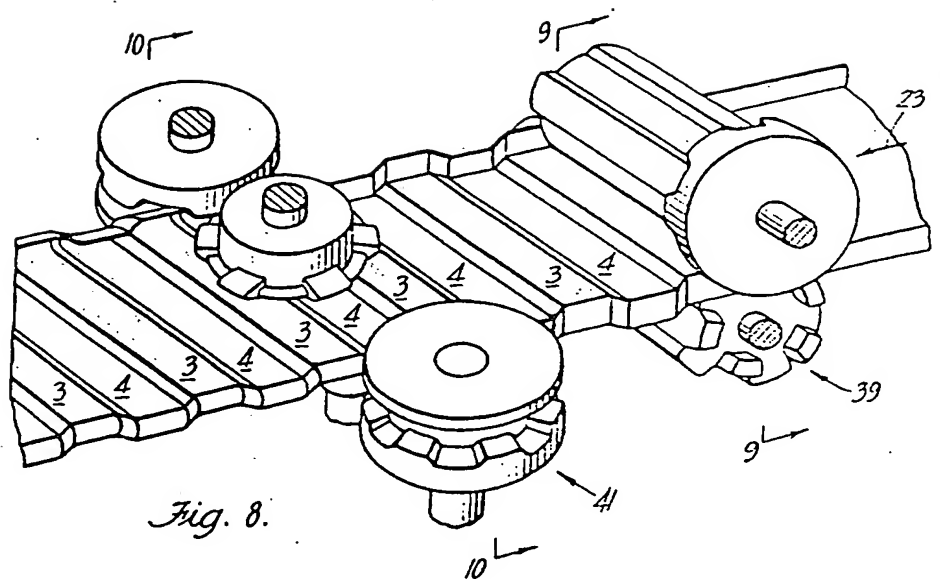


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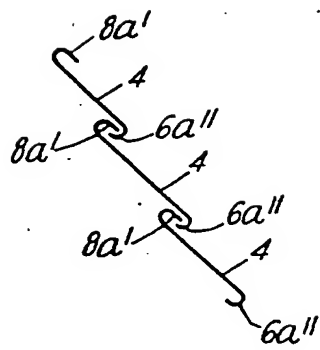


Fig. 11.

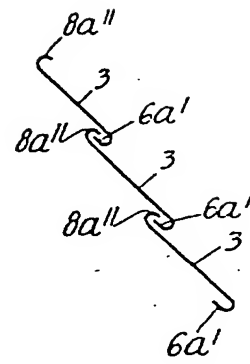


Fig. 12.

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